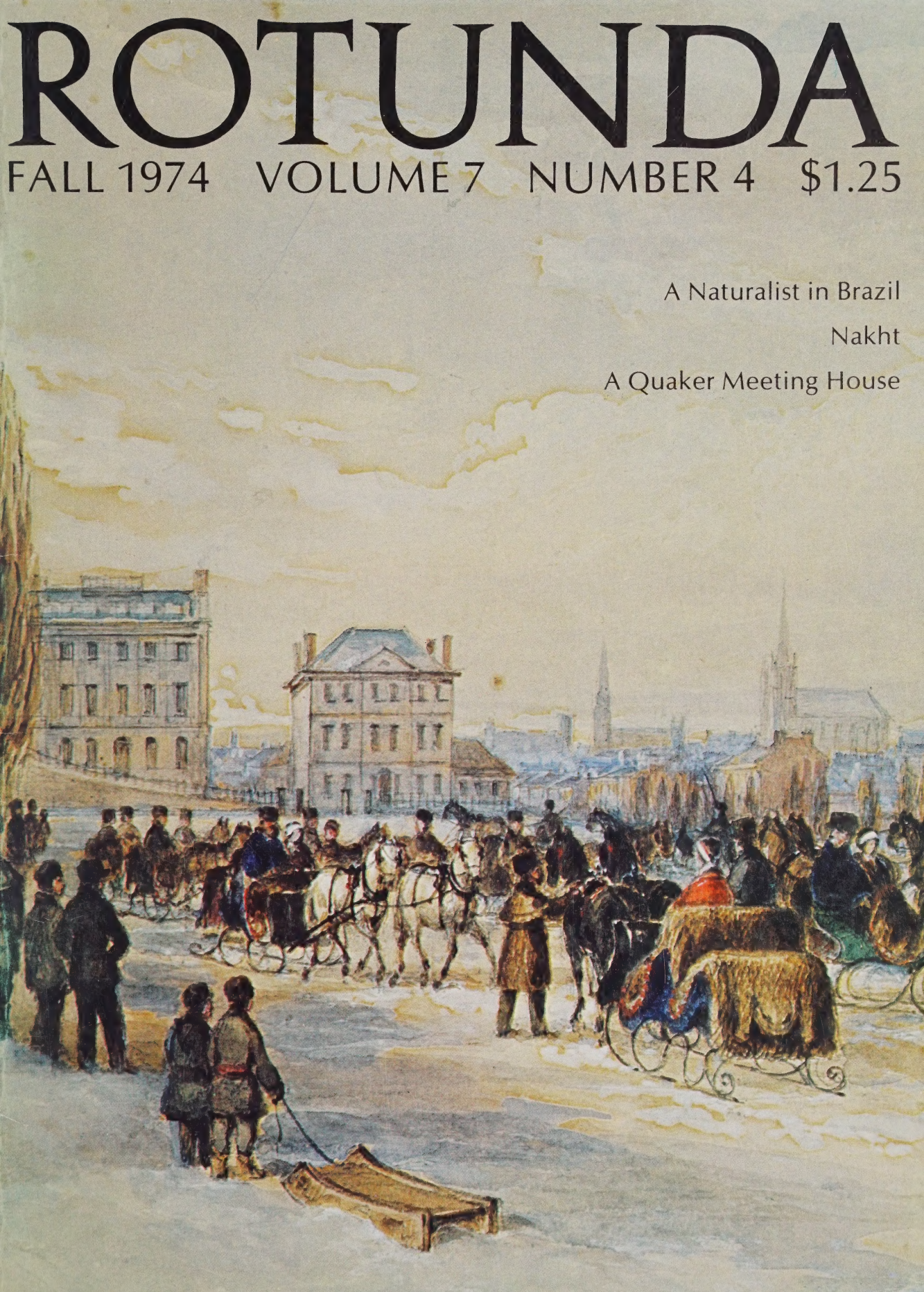
ROTUNDA

FALL 1974 VOLUME 7 NUMBER 4 $1.25

A Naturalist in Brazil

Nakht

A Quaker Meeting House



ROTUNDA

the magazine of The Royal Ontario Museum

Volume 7, Number 4, Fall 1974

Department of Museum Volunteers
Royal Ontario Museum
100 Queen's Park
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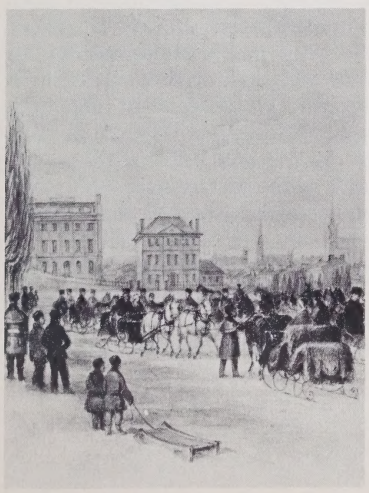

Cover: Part of The Quebec Tandem Club, Champ de Mars, Montreal, *by James Duncan (1806-1881). Watercolour and gouache over soft pencil. See page 30.*

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On Planetarium Experiences, Old and New

About 150 years ago, in a popular book on education, Maria Edgeworth described a lecture on astronomy. She referred to the advertisement, similar to a play-bill, to the company, lights, boxes, pit, and great curtain of a playhouse, and to the soft music "from an harmonica, which was concealed behind the scenes". After mentioning the lecturer's discussion of the sun, of the rotating and revolving earth, of the changing aspect of the moon, and of the tides, she made particular reference to the last scene. "It showed the whole solar system, as it is called, with every planet and satellite in their annual rotation; and there they saw bright Venus, and red Mars, and Jupiter with his satellites, and Saturn with his ring; and last, but not least, they saw a comet with its bright tail. The curtain fell, and Frank and Mary were sorry, for they were now much more awake than they had been at first. It was very different with some of the other little children, who had not been awakened by the moon or by the eclipse, or even by the comet, but were now dead asleep, in various attitudes."

The experiences referred to are characteristic of an early 19th-century lecture-demonstration given annually in London, usually during a week in Lent, at a theatre or any assembly hall furnished with a stage and capable of seating a large audience. Similar lectures were also held at provincial centres, again in theatres and large assembly rooms. The main attraction was the *Eidouranion*, a vertical model of the solar system invented by Adam Walker during the 1770s. Some 20 feet in diameter, it occupied the rear of the stage and was "transparent" in the sense that it was illuminated from the rear. Although its construction involved large amounts of wax-impregnated silk or muslin, it was provided with gearing and its planets could be set in motion merely by turning a handle. It was designed to take a variety of attachments and was invariably supplemented by other large "transparencies". Some of the latter had wheelwork for demonstrating astronomical principles, others were representations of the sun, moon, and planets as seen through a large telescope. On occasion a comet would travel across the auditorium, an effect doubtless produced by driving a cleverly contrived model on fixed guide wires.

While assistants operated the apparatus and moved the transparencies, the lecturer read from a script—at least, until he could rely on memory alone. A lecture lasted about two hours, but as Faraday once remarked, the theatre predisposed audiences to expect a long session, and the numerous different effects, unusual nature of the subject, and regular musical intermissions prevented all but the very young from falling asleep. There must have been a wide range in lecturing ability. Some lecturers took advantage of the popular love of the unusual and marvellous with more finesse than others. Some were good entertainers but mediocre imparters of information; others dispensed much information but not in a particularly interesting way. We can be sure that popularization was often achieved by sacrificing accuracy and meaning. Many visitors were diverted rather than informed by what was sometimes a frivolous and showy display. In the literature one particular lecturer is complimented for his "deep enthusiasm" and "amusing manner". At one stage the same lecturer was visibly "overpowered by the grandeur of the subject". This reaction, undoubtedly communicated to the audience, arose when "the approach of night was admirably imitated by the machinery employed, and the spangled appearance of the firmament, with the Milky Way, powdered with stars, had a very striking resemblance to nature".

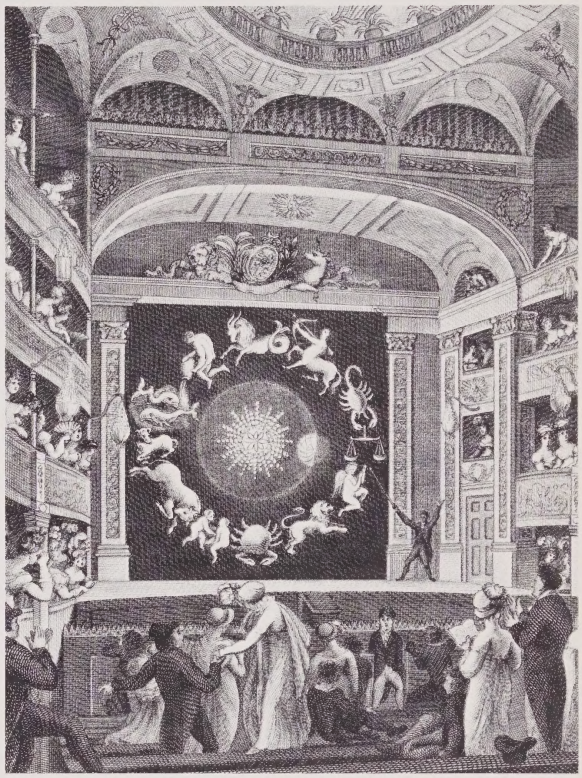
Some lecturers introduced a strong line in natural theology. Using "splendid and extensive Scenery", R. Franklin at Oxford in 1828 discussed the concept of the plurality of worlds and "the Mosaic account of the Creation—the Flood—the standing still of the Sun—the shadow going back ten degrees on the dial of Ahaz—and the darkness of the Crucifixion". But the majority pioneered in translating the ideas and discoveries of William Herschel into easy, everyday terms. They told of an astronomy more romantic than that studied in universities or conducted at major observatories. People who understood nothing of physics and mathematics listened with fascination to descriptions of possible inhabitants of the sun, volcanoes on the moon, nebulae, double stars, variable stars, and the probable shape of the Milky Way System. They may not have understood what they saw and heard, but many would have been encouraged to learn more.

Transparent apparatus and paintings held their own in public lectures and exhibitions until well into the second half of the 19th century. After 1826, however, when Thomas Drummond constructed the first

"limelight", the magic lantern show began to appear as a popular form of entertainment. Further, Carpenter's new process for making slides lent itself to the portrayal of astronomical diagrams and phenomena. Eventually, most of the basic effects of the large and elaborate Eidouranion could be produced by turning the handle of a mechanical slide mounted in a rear-screen optical projector.

Parallels between the methods and aims of over a century ago are obvious to anyone who has visited the Star Theatre of a modern planetarium. Audiences still love the unusual and marvellous, succumb to the magic of the night sky, and readily respond to attempts to provide information in a clear and interesting way. The speaker's voice, whether "live" or replayed by tape, has to be compelling and never dull, and the information he imparts, accurate and well arranged. Visual effects, now highly sophisticated, are nearly all produced by optical projectors, and are both numerous and varied. In the McLaughlin Planetarium a Zeiss "universal" planetary machine, not "transparent apparatus", dominates the stage, now reduced to a central dais. By reason of its weight, some two-and-a-half tons, and the need for a large hemispherical projection dome, its mobility is restricted to motions on its own supports. In compensation, astronomical programmes, lectures, presentations, shows—call them what you will—can be given throughout the year and not restricted to one week just before Easter. Some critics, like Sir David Brewster of old, consider that the effects are "for the amusement rather than the instruction of a wondering audience". Others complain that there is not sufficient emphasis on amusement and entertainment. But the need to present astronomy to the public at large still remains, and the more so in view of its growing complexity and rapidly-expanding frontiers. If the planetarium, as the late R.S. McLaughlin once remarked, can give people some idea of the nature and immensity of the universe of stars, it will be eminently worthwhile. On the other hand, we hope that the imagination of anyone who visits the McLaughlin Planetarium will be stirred and not, as in the case of someone at one of Walker's scenic lectures, "overwhelmed" and then "entirely lost and sunk in the abyss of nature."

H.C. King *McLaughlin Planetarium*



The proscenium of the English Opera House in the Strand, 21 March 1817, with Walker's exhibition of the Eidouranion. (By courtesy of the Victoria and Albert Museum)

Zeiss-Jena planetarium

"Green days in forests and blue days at sea"

A Naturalist in Brazil

Ian R. Ball

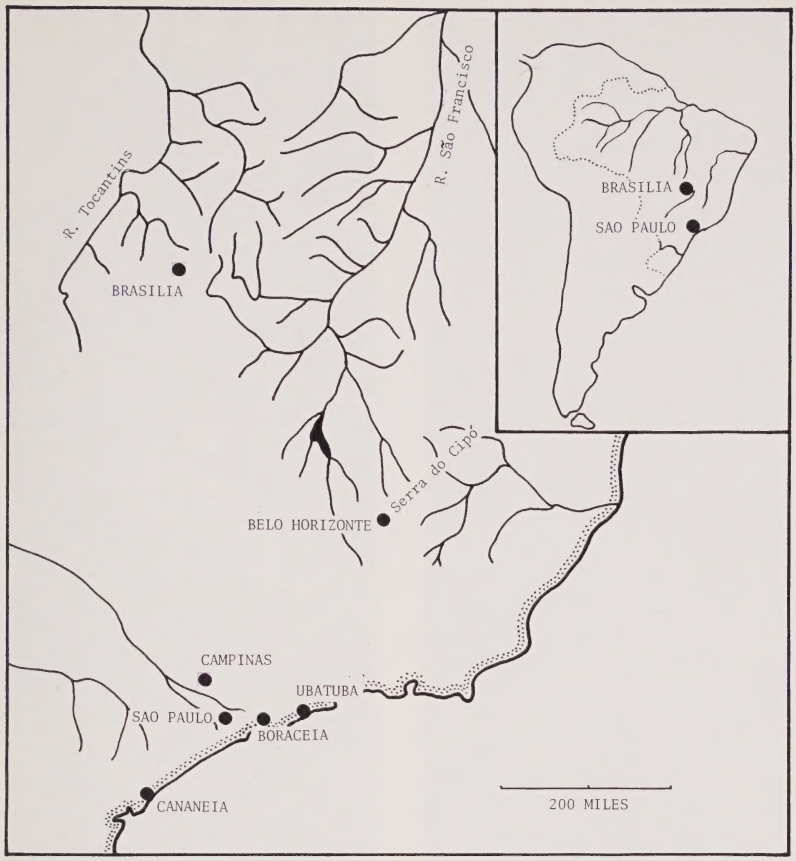
I will make a palace fit for you and me
Of green days in forests and blue days at sea.
Robert Louis Stevenson

I had never crossed the equator before. So on the flight from New York to Rio de Janeiro I kept watch from my carefully chosen seat ("in front of the wings, please") to be sure of knowing when that dividing line had been crossed. Of course, I didn't really expect to see a sign reading: "You are now entering the Southern Hemisphere—please drive carefully," but I did hope—unreasonably, perhaps—to see more than just sun and clouds. And my hopes were not disappointed. There, to the west of the speeding jet, was the beautiful sight of a perfectly complete circular rainbow suspended mysteriously in the sky. It was a superb sight and I wanted to share it with my neighbouring passenger. However, he was asleep, and as we had not been introduced I did not presume to wake him.

Later I broke protocol and told him what I had seen. It turned out that he was a physicist from an American university on his way to São Paulo, my own ultimate destination. Also, he was a specialist in diffraction phenomena and had written a technical paper on the very thing I had seen. After rebuking me gently for my good manners in not awakening him he told me that he had himself seen completely circular rainbows only three times—and he was an expert on them! An auspicious beginning. Was this to be the trip of a lifetime? It was.

To visit South America has always been a dream of mine. This romantic continent is not only steeped in colourful history but is a naturalist's paradise famous for the wealth and diversity of its plant and animal life. No naturalist who has spent time with Henry Walter Bates' *The Naturalist on the River Amazons* or with Charles Darwin's *Journal of Researches into the Natural History and Geology of the Countries Visited during the Voyage of H.M.S. Beagle Round the World* could suppress the hope that he too, one day, would see these exotic places. And of the entire South American continent, what better country to visit than Brazil? Accounting for half of South America's surface and population, embracing the greatest riverine system in the world, with both tropical and subtropical aspects, and yet with few extremes of temperature, Brazil contains a rich diversity of fauna unmatched by that in temperate North America.

By profession I am an invertebrate zoologist, a specialist in the lower metazoa, especially in various sorts of worms. It was in 1970, at a conference on worms (yes, they really do have such things!) that I received an invitation from Dr. Eveline Marcus to visit Brazil. But it was not until January 1974 that I was able, with the support of the Department of Entomology of the Royal Ontario Museum and of the Fundacão de Ampara à Pesquisa do Estado de São Paulo (FAPESP), to avail myself of this opportunity to undertake studies and research based at the Zoology Department



Page 4: Coluja River, Boracéia

Page 5: Cananéia: Biological Station of the Oceanographic Institute, University of São Paulo

Facing page: Mangroves, Ilha do Cardoso, Cananéia

of the University of São Paulo. Here working space and facilities were assigned to me through the kindness of Professor Diva Corrêa.

São Paulo has produced a number of outstanding zoologists, thanks largely to the influence of the late Professor Ernesto Marcus and his wife, Dr. Eveline Marcus, who together comprised one of the greatest teams of invertebrate zoologists of the twentieth century. Because Dr. Marcus and some of her colleagues are experts in the study of planarians or triclads, the animals in which I am most interested, I was especially excited at having the opportunity of working in São Paulo.

Apart from my fieldwork in the streams and rivers in the vicinity of the city of São Paulo, I also had scheduled into my two-month visit field studies at the marine biological stations of the University of São Paulo at Cananéia and Ubatuba, at the Biological Station of Boracéia belonging to the Museum of Zoology, in the mountains of Sera do Cipó in the State of Minas Gerais, and in the State of Goias and the Federal District of Brasilia (see map). Although primarily I was interested in collecting marine, freshwater, and terrestrial planarians for the Museum's permanent collections, and to facilitate my own research, I had promised my colleagues that I would collect certain insects, arachnids, and crustaceans for them, and I wished also to augment our general collections of marine invertebrates. So everywhere I went I was engaged in a wide range of activities.

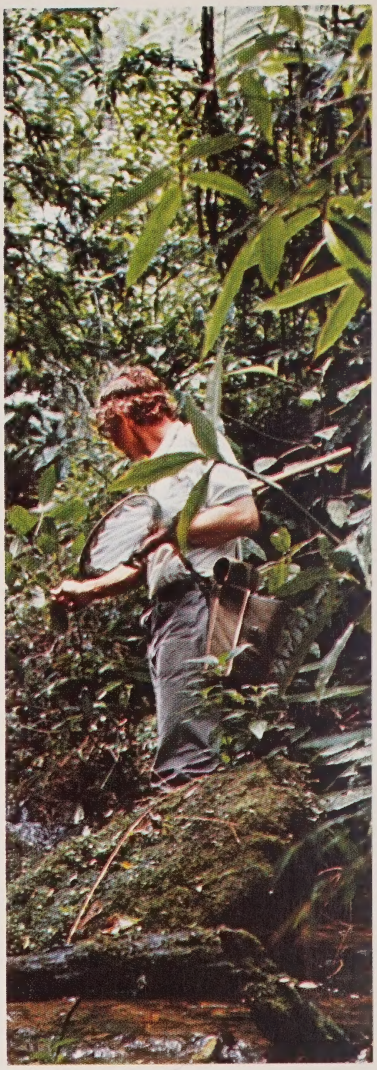
At Cananéia in the south of the State of São Paulo I had my first experience of mangrove vegetation. The roots of these trees often form downward curving branches that tangle together and impede the flow of tidal currents, thus causing a deposit of mud. The seeds may sprout while still on the tree; consequently, when the young plant drops, it is able to establish itself rapidly. In this manner mangroves gain their ascendancy over the sea, and open shoal water may be changed into thick swamp forest in as little as thirty years.

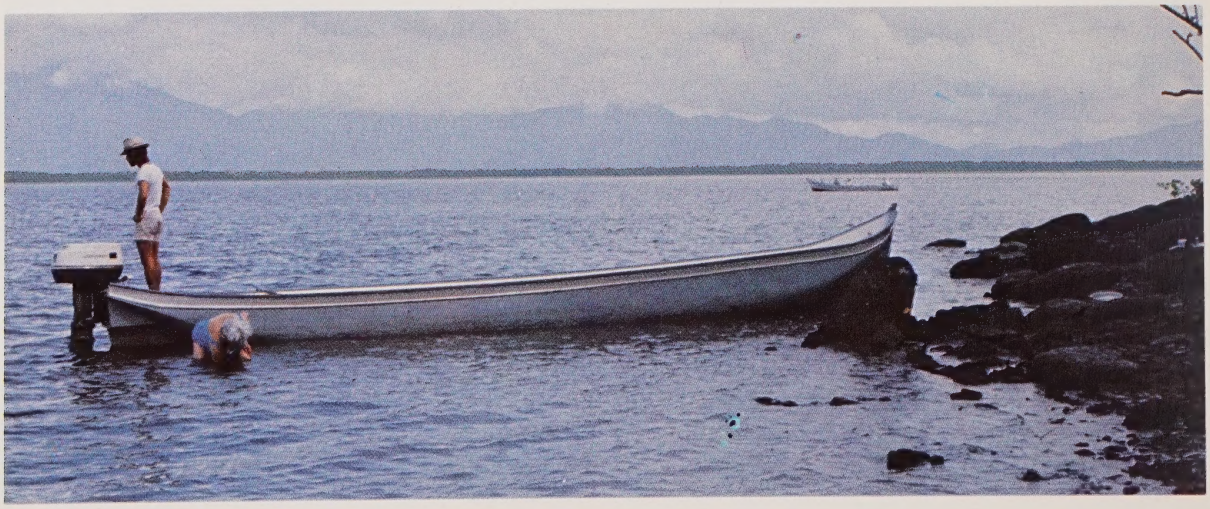
Our boat trip to the mangroves of Ilha do Cardoso was unforgettable. In a motorized dug-out, owned by the government, we forged across a flawless sea matched only by the blue of the cloud-flecked sky. As principal guest I occupied the bows of the boat, clear of the spray, whereas my three companions, Dr. Marcus, Julio, and Umberto, sat further astern, the brilliant yellow of their protective capes contrasting wonderfully with the blue back-

Left: The author (left) and Dr. C.G. Froelich investigating the fauna of temporary pools at the summit of the Serra do Cipó, Mina Gerais

Right: Dr. C.G. Froelich collecting insects at the Rio Claro, Boracéia

Bottom: Dr. Eveline Marcus collecting molluscs, Ilha do Cardoso, Cananéia. The boat is a single hollowed-out tree trunk.





ground. Overhead frigate birds wheeled and soared, and on both sides of the boat a school of porpoises accompanied us as if to make sure that we did not deviate from the most direct route.

On entering the mangrove swamp we found ourselves in another world. Here all was calm and still and, with the mangrove trees shutting out the wind, extremely hot. Numerous colourful and noisy birds, all totally unknown to me, flashed back and forth across the channel, while in the trees bright crabs, quite oblivious to the incongruousness of their placement, sat and watched us go by.

The ride through the mangroves was mainly for the experience, but on the stony beaches of Ilha do Cardoso we got down to some serious collecting. Here we found many large polyclad flatworms, numerous brachiopods, hitherto unrepresented in our collections, and several species of beautiful nudibranch molluscs. These latter are Dr. Marcus' speciality, and later she found that one of those collected was a species new to science.

Planarians are small, unsegmented, usually flat, gelatinous-looking worms. Aquatic forms are usually dull and measure less than 25 mm, but terrestrial forms may be brightly coloured and up to 60 cm in length. The simplest way to find freshwater planarians is to pick up stones from a stream bed and observe the underside. Never having been in tropical forest before, I had no idea how dense and dark it is. At Ubatuba in order to find my animals I had to turn the stone and then run up and down looking for a shaft of sunlight with which to illuminate it, by which time all my animals had crawled to the other side! Despite these difficulties, however, our collecting was successful, and we obtained many freshwater planarians for study. We also followed one particular stream to the sea and there found the planarians living within the tidal zone mixed with marine organisms. This is a phenomenon I had never

Cadlina evelinae *(lower right) and other nudibranch molluscs from Ilha do Cardoso, Cananéia.*

Choeradoplana langi, *a terrestrial planarian that carries its head coiled back like a watch spring. Boracéia (photo C.G. Froehlich).*

Dugesia, *an aquatic planarian from streams of the Serra do Cipó, Minas Gerais.*

Facing page: Bipalium kewense, *a terrestrial planarian from the Serra do Cipó. This species has been accidentally introduced into Canada.*

observed on the Atlantic coasts of North America and Europe. In these regions marine planarians extend into estuaries, though rarely above the tidal zone, and the freshwater forms are intolerant of high salinities.

Also at Ubatuba Dr. Pierre Montouchet of the University of Campinas introduced me to the strange microhabitat within bromelias. I have known for a long time that there are certain types of organisms, some mosquito larvae and copepods (water-fleas), for example, that can be found only in the water trapped in the axils of the leaves of aerial plants, or from water-filled tree holes, but I was quite unprepared for the richness of the fauna contained in a large bromelia. These epiphytic plants collect a large amount of water in their axils, and this can be collected by cutting off successive sections of the plant and pouring off the water and debris into a suitable vessel. The water contains a curious mixture of freshwater and terrestrial organisms—aquatic insect larvae, ostracods, and mites, side by side with terrestrial arachnids and crustaceans, and large cockroaches highly adept at swimming and able to remain submerged for extensive periods of time. There is also an earthworm known only from bromelias high up the trees. Biological nomenclature can be a dull subject, but there is a pleasant irony in being able to give an earthworm the specific name *superterraneus*.

Although I am interested primarily in marine and freshwater planarians I did not want to miss the opportunity of looking for terrestrial forms while in the tropics. In Ontario and Quebec only one species is commonly found, and this is a small and very inconspicuous form that lives under logs and among leaf litter. Occasionally a larger exotic type, *Bipalium*, has been found, imported with fruit or vegetables, but this species cannot survive our winters and thus persists only in greenhouses. Terrestrial planarians are primarily tropical organisms.

The very first stone I turned in São Paulo yielded three species of *Geoplana*, a lancet-shaped worm about 3 cm long, and while swimming in a pool in the Serra do Cipó I came eye to eyes (for *Bipalium* is multiocular) with a black and yellow striped beauty about 20 cm long. He was embedded in the side of the pool and was most reluctant to be collected. Later, in a farm near Campinas, Dr. Montouchet and I found a spot with a marvellous abundance of terrestrial planarians. Each stone or log, when turned, was found to harbour several distinct genera and species, some of them most attractively coloured. I was reminded that Darwin himself, in 1832, was one of the first to observe in detail these interesting animals. While at Rio de Janeiro, during his epic voyage round the world, he found that: "The existence of a division of the genus *Planaria*, which inhabits the dry land, interested me much ... In general form they resemble little slugs, but are very much narrower in proportion, and several of the species are beautifully coloured with longitudinal stripes." Darwin thought that they fed on rotting wood, but in this he was mistaken because they are carnivorous.

For fieldwork in Serra do Cipó I accompanied Dr. Claudio Froehlich of the Zoology Department of the University of São Paulo, an authority on land planarians and stream insects, and two of his graduate students. Our purpose was to investigate the fauna of the cool mountain streams and for me, of course, the planarians were most important. We obtained specimens from nearly every locality investigated, and because this area had not been worked

before, the results of further laboratory studies of our specimens may be awaited with some expectation of finding new and interesting species.

The open moorland appearance of the summit of the mountain range was a welcome change from the forest scenery I had become accustomed to, and many of the moorland flowers were most beautiful. It was on Serra do Cipó, too, that I found several specimens of *Latrodectus* under a stone. This is the genus to which the black widow spider belongs, and even though the other species are not quite as dangerous, so I am told, I did not bother to collect them. I rationalized my decision by reflecting that, after all, I am an invertebrate zoologist, not an entomologist.

The mountains of Serra do Cipó are delightful, not only because of their visual beauty, but because the cool breezes on the heights discourage the attentions of biting insects. Here we spent seven days at a small pension. Prickly pear grew outside our windows, and numerous humming birds enlivened the evening air with their sound and colour. At dusk the *vaucheros* would race their cattle along the dusty road, hitch their horses next to the Volkswagens, and stride into the open bar, their spurs jingling on their bare feet. I was a little sad when the time came to return to São Paulo, even though I knew that I would get a warm welcome from my new friends there.

Both at Serra do Cipó and at the Biological Station of Boracéia in the Serra do Mar I became involved with the entomologists in light-trapping at night. I particularly wished to bring back a collection of hawk moths for our research associate, the Reverend J.C. Riotte. The Station at Boracéia is ideally situated at the summit of a knoll overlooking hilly countryside. The walls of the station are painted sheer white, and an ultra-violet lamp hangs from the eavestrough so that at night the whole house becomes one huge light-trap. The density and diversity of the insects attracted by this was remarkable, a fact much appreciated by the local toads. These very large toads have learned that when the UV light is on the pickings are good, and they line up on the lawn waiting for the insects to arrive. Sphingid moths, although attracted to light, rarely settle but flutter about close to the ground in the immediate vicinity. Several times I lost the race for a prize specimen to one of our amphibian friends. Their capacity was enormous. On one occasion, while light-trapping at the River Coruja, the insects attracted were so abundant that it was unwise to open one's mouth; as it was, one's nose and ears were constantly irritated by the smaller species!

It was while light-trapping at dead of night that I saw my first column of army ants on the move. It was a small but highly predatory type that builds a nest, denudes the surroundings of food, and then moves on to new pastures. We had caught them moving house. The length and orderliness of the column was fantastic, and at insurmountable obstacles, such as trees or large boulders, the column simply split in two and then joined up again several yards further along the trail. I found myself thinking that if Torontonians could show equal discipline on the Don Valley Parkway my daily journey to and from the ROM would be much quicker and less painful.

Thus far all my work on freshwater animals had been done in rivers flowing to the south. Between São Paulo and the sea there is a range of mountains, and so all the local rivers flow away from the sea westwards and then southwards on their long voyage to the Parana River system and then to the sea. I wanted now to cross the northern watershed to the capital city of Brasilia, from

where access to tributaries of the Tocantins and São Francisco rivers was possible. These rivers flow northwards and might be expected to have different animals from those I had already collected. Furthermore, all previous expeditions to study the freshwater fauna of the Brazilian interior had failed to bring back suitable specimens of planarians for study. As a specialist, I was more hopeful of finding the right places to look.

Claudio and I thus journeyed to Brasilia where we were joined by Kiniti Kitayama and Braulio de Souza Dias of the Biology Department of the University of Brasilia. Kiniti and Braulio knew the countryside well, and we found ideal springs and cool torrential streams both within the Federal District and in the State of Goias in which to collect our specimens. The long cascade of the Itaquiri Falls was particularly memorable for its impressive unspoiled beauty, and for the richness of its fauna. At Agua Minerale in the National Park of Brasilia I encountered one of the most productive habitats I have seen anywhere in the Americas. Nearly every stone turned was thick with planarians or their cocoons, and we obtained many mature specimens of a species which, like many others we collected, is probably new to science. In the pool into which the spring flowed we encountered a dense fauna of a different kind. Half Brasilia, it seemed, was seeking refuge from the heat.

From Brasilia I flew home to the ice and snow of Toronto via Manaus, Caracas, and Miami. It was hard to leave just two days before Carnival Time in Rio. Two hours after landing at Malton Airport I was back at the ROM for an official function so kindly arranged by my colleagues in my absence! The forests and mountains of Brazil were already no more than a memory, but friendships remain, and I shall always be grateful to Eveline for her hospitality and to Augusto and Elvira (whose cooking was marvellous) for their many kindnesses.

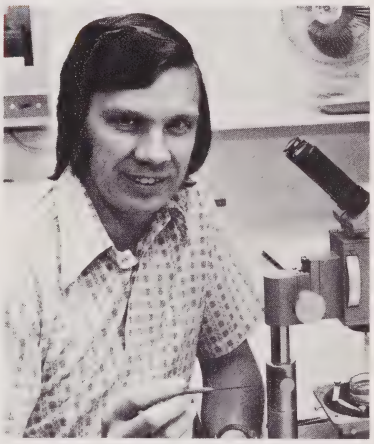
Why should a Canadian zoolo-

Above: Calliandra blossom in the Botanic Gardens, University of São Paulo

Right: Itaquiri Falls, Goias

Facing page: Katydid, a large exotic relative of grasshoppers and locusts, photographed at Ubatuba

Ian R. Ball, a Lancastrian, studied at the University of Liverpool and received his Ph.D. at the University of Waterloo in Ontario. Apart from his work on the systematics and biogeography of lower invertebrates he has conducted research in the fields of pharmacology and water pollution. For his taxonomic work he has conducted field work in Europe, North America, and South America, and he has published on the fauna of Africa, Asia, Australia, and Antarctica. Dr. Ball joined the staff of the ROM in January 1973 as Assistant Curator in the Department of Entomology and Invertebrate Zoology. His principal recreations are music, history, and philosophy.



gist, a specialist in flatworms, go all the way to Brazil to do research? There are many answers but the straightforward one is simply that I am interested in Nature and will study her wherever and whenever I have the opportunity. All biological knowledge is dependent upon sound classification and on a proper comprehension of the evolutionary relationships of animals. These cannot be obtained through a parochial outlook because Nature herself does not bestow all her secrets around a single parish pump.

There are two other very important reasons. First, much of the fauna of Canada and the United States is derived ultimately from the Southern Hemisphere via South America. Clearly a proper understanding of our native fauna requires an understanding of the old sources of immigration. Second, among the most exciting developments in modern geology and biology has been the refinement of the Hypothesis of Continental Drift, the theory that all land masses were once held together in a single super-continent but have since drifted apart to their present positions. Biogeographical data, evidence from the distribution and relationships of living animals and plants, is of the utmost importance to this hypothesis. Already, for example, my work has shown that there are in South America freshwater planarians, incapable of having been accidentally transported by wind or sea, that are more closely related to species in South Africa and Australasia than to any other forms anywhere in the world. This fact is consistent with the Continental Drift Hypothesis, and I await with some excitement the results of my next laboratory studies to see if they provide further confirmation.

One month after my return from Brazil I was cracking ice on ponds in Ontario and in Michigan, my hands numb with cold, my nose threatening to part company with my face. Together with a visiting zoologist from the Natural History Museum in Paris I was looking for a rare planarian that is found early in spring (actually, very early). "Mon Dieu," said my colleague, "surely these worms cannot live under these conditions." "I'm afraid they do," I replied, but as my mind strayed back to those green and blue days in Brazil, when I was foolish enough to complain of the heat, I added, "but I sure wish they didn't."

Nakht before the autopsy

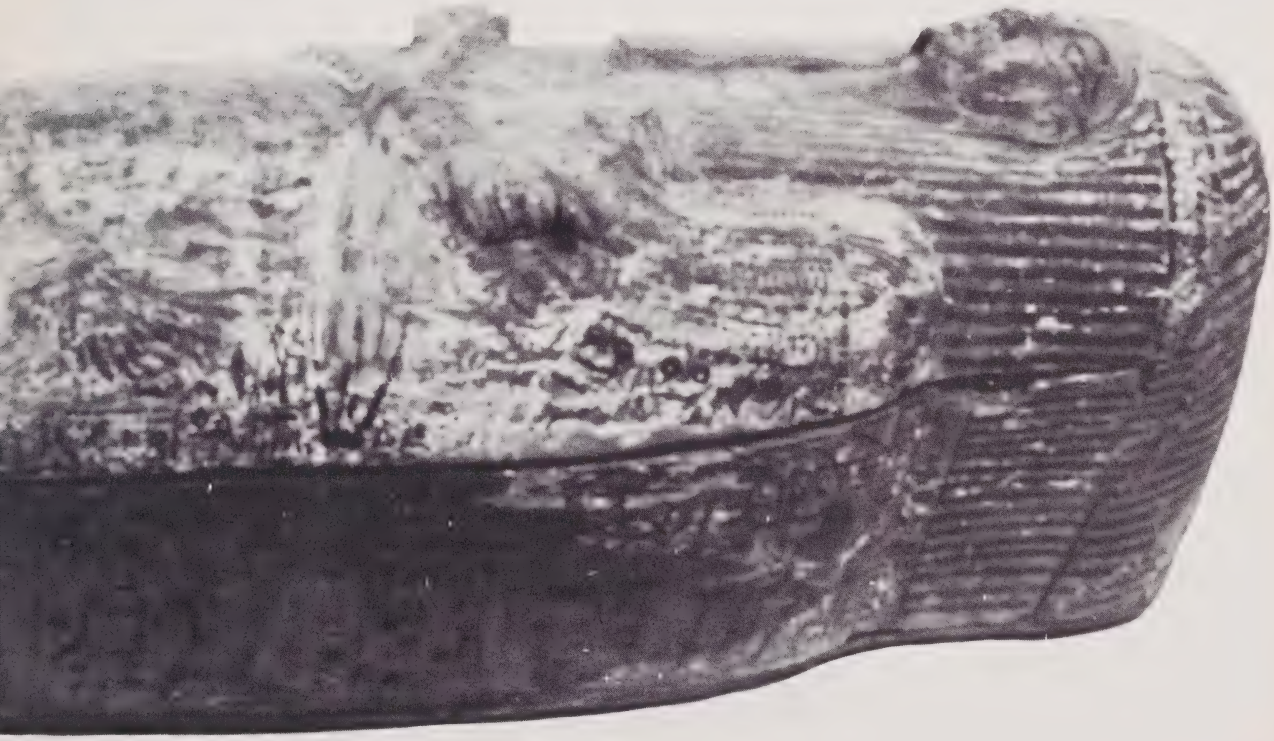
The wood coffin of Nakht with the lid in place. Typical of its period with the hands and face raised in relief; the decoration medium is painted plaster.

NAKHT *A Weaver of Thebes*

Peter Lewin
A.J. Mills
Howard Savage
John Vollmer

Throughout history the powerful, the wealthy, and those with unusual gifts of intellect or spirit, have all made their mark. In the summer of 1974, however, a young Egyptian named Nakht, a weaver by trade, who died about 3,200 years ago in the city of Thebes, made medical history in a land far away from his own, a land of which he and his forefathers had never even heard. On Friday, August 9, a belated autopsy on the mummified body of Nakht, formerly on display in the Royal Ontario Museum, was performed in the Anatomy Department of the University of Toronto in the presence of over forty specialists from Canada and the United States representing a wide variety of scientific disciplines.

The following account of this unusual event, its background, and its purposes is the composite work of four of those involved. Mr. A.J. Mills gives the origin of the mummy and sets the figure of Nakht in his historical context; Dr. Peter Lewin explains the background of the autopsy and the details of the actual examination; Dr. Howard Savage provides information about Nakht's probable age and stature at the time of his death; and Mr. John Vollmer describes the wrappings and garments in which the mummy was encased.



"In the chamber was found a second burial of the XXth-XXIst Dynasty. The coffin, of the usual type of this period, was found resting awry on the slope of the rubbish with which the chamber was half-filled; it had simply been thrust into the chamber without any attempt at clearing out the original rubbish or the remains of the original burial. . . . The coffin contained the mummy, with a wooden mummy-cover or board." (E. Naville, *The XIth Dynasty Temple at Deir el-Bahari, I*, (London, 1907), p. 45.) In these words the excavator described his discovery of the mummy which was recently studied by the Paleopathological Association in Toronto.

In 1903 the Swiss Egyptologist Edouard Naville began his excavation of the Theban mortuary complex of Nebhepetre Mentuhotpe III of the XIth Egyptian Dynasty at Deir el-Bahari. In 1905 he was joined by C.T. Currelly, founder of the Royal Ontario Museum. That season they excavated a series of shaft-tombs dug beneath the floor of the northeast side of the Upper Colonnade, which had belonged to the original temple of the twenty-first century B.C. As a result of his participation in the field work, Currelly acquired the coffin mentioned above, complete with its mummy. Together with the multitude of other ancient Egyptian pieces that he collected, it eventually came to the ROM.

The biographical information contained in the inscription on the coffin is meagre but very important. The deceased was Nakht, a weaver in the funerary cult of Userkhaure. The pharaoh Userkhaure is better known to us as Setnakht, the founder of the XXth Dynasty and the father of Ramses III. He died about 1198 B.C. and a funerary cult honouring the dead king as the god Osiris was established in perpetuity. Unfortunately we know almost nothing about this particular cult: the only records of its existence are the mention of it on Nakht's coffin and references in two contemporary papyri.

This type of cult, the *keni* in ancient Egyptian, had attached to it not only priests but also persons connected with a wide variety of trades and industries. It seems quite likely that much of the expenditure of such a cult was supported by the income from these small industries. Thus the cult establishment for Setnakht probably had flax fields as part of its endowment and weavers to make the cloth that provided some of the income. As Nakht was not an overseer or a chief of weavers or a functionary of similar rank, we assume that he was one of a group of weavers in the cult establishment, and that he was therefore a man of low class, with small means. Had he been wealthy enough, he would almost certainly have bought himself a priestly position and this information would have been on the coffin. It was unusual, however, for someone of such humble status to be buried in a coffin with even the simple appurtenances that Nakht had. Perhaps one of the perquisites of employment in a funerary cult at that time was a more elaborate burial for oneself.

Egyptian mummies have been objects of curiosity for many centuries. An aura of mysticism

Nakht's brain, one of the oldest in existence

As the bandages are removed, the tunic is seen wrapped around Nakht's feet.

has developed around the methods of their preservation, although Herodotus, in the fifth century B.C., recorded accurately the methods used by the Egyptians of that time.

Because soft biological material decomposes rapidly after death, most of the remains of ancient man consist of bone. The religious beliefs of the ancient Egyptians, however, led to a widespread practice of preserving bodies by mummification, particularly the bodies of the royal and privileged of the land. These mummified remains make up the largest known source of preserved human beings who died many centuries ago.

It was early in the present century that a systematic investigation of Egyptian mummified material was begun. The field of palaeopathology—the study of ancient man and his contemporary disease states—which includes the microscopic examination of hydrated mummified tissues, was pioneered by Sir Armand Ruffer but remained largely neglected until a recent resurgence of interest in the diseases of antiquity.

In the spring of 1973 Dr. Aidan Cockburn, an associate of the Smithsonian Institute, organized at Wayne State University, Michigan, an autopsy on an Egyptian mummy, in which a selected group of medical specialists were invited to participate in order to obtain as much scientific information as possible about the death of the mummified individual. Because Toronto has an active group of scientists interested in palaeopathology, Dr. Cockburn was invited to address a meeting of the Academy of Medicine. Following the meeting he suggested that a similar autopsy be organized here. A committee was formed, headed by Dr. Gerald D. Hart, Chairman of the Museum Committee of the Academy of Medicine, and through the courtesy of Dr. N.B. Millet, Curator of the Egyptian Department of the Royal Ontario Museum, and the Trustees of that institution, the mummy of Nakht was donated to the project.

Before the autopsy the mummy was X-rayed by Dr. Rideout at the Princess Margaret Hospital. The X-ray examination showed that the skeletal remains of the mummy's body were well preserved, except for the skull, which had caved in. It also indicated that Nakht's age when he died was between 14 and 18 years, that he had perfect teeth, and that the heart and other internal organs were still intact in the body. Particularly interesting was the discovery of transverse lines, called "Harris lines", near the growing ends of the bones on both knees, which indicated areas where bone growth had been arrested, as often happens in cases of febrile illness or starvation.

Two days before the autopsy the linen wrappings and bandages were removed from the body and were found to be remarkably well preserved. They had not been soaked in bitumen, as in conventional mummification, and so the various layers of cloth were not all stuck to one another. During the removal of the bandages from the head and the exposure of the damaged cranial cavity, a well-preserved shrunken brain was found. This was a most exciting discovery, for Nakht's is one of the oldest and best-preserved brains in existence. It also confirmed that Nakht was not truly mummified but had been preserved naturally by desiccation.

Only persons of wealth and rank could afford the expensive and complicated embalming and burial ritual of the late New Kingdom. The full process involved the removal of the internal organs for separate treatment, the chemical desiccation of the body, and the application of a number of scented oils and resins. After this the body was carefully packed and wrapped in shrouds and bandages in alternating layers. Nakht's body, however, had not undergone the elaborate preparation for burial. It had simply been wrapped up and placed in its coffin. Its desiccation and preservation had been a natural process entirely due to the dryness of the Theban climate.

When first seen encased in its semi-rigid wrappings, the mummy suggested a slimly built person of between 5′ 6″ and 5′ 10″ and weighing between 100 and 120 lb. The damage to the top of the head made the exact length uncertain. As the voluminous wrappings were removed, turn by turn and fold by fold, Nakht became slimmer and shorter until there remained the form of a slight youth with a height of 4′ 8¼″ and a weight of only 11 lb. 5 oz. The mummy had shrunk considerably within its wrappings, which had no doubt been skin-tight when applied but were now separated from the parchment-like skin by a space of well over an inch all round.

Estimates of Nakht's height and age at the time of his death must take account of at least four factors. (1) The measured length of the mummy may have been affected by the generalized shrinkage of non-bony parts, especially of the intervertebral discs. (2) Radiographic films show open epiphysial plates at the lower ends of the thigh bones, the upper ends of the shin bones, and between the vertebrae, at all of which points growth was in progress at the time of Nakht's death. (3) An age estimate of 15 years, based on these observations, is further favoured by the fact that, because of racial and geographic influences, union of the epiphyses, in the upper limbs at least, occurs at an earlier age among twentieth-century Egyptian males than among Europeans. (4) Nakht's stature and bone development may have been retarded by periods of illness or other physical stress during the last one-and-a-half years of his life, as indicated by the "Harris lines" in the X-rays.

The fact that the body had not been eviscerated meant that, in

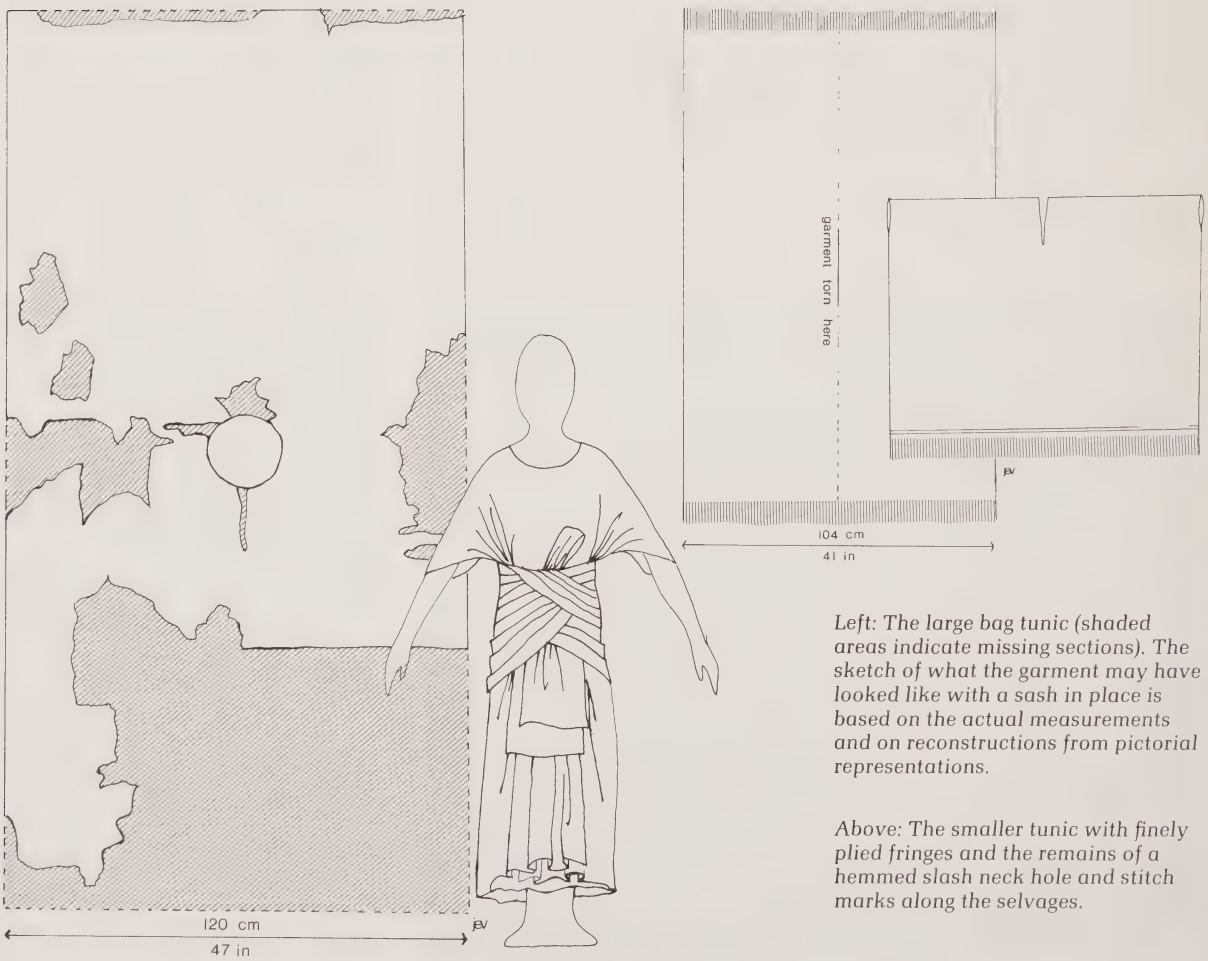
addition to the brain, the heart, liver, kidneys, stomach, intestines, and other organs were discovered intact in their normal anatomical positions. A most interesting find was a greatly enlarged spleen surrounded by some dark biological material, which may have been the result of a splenic haemorrhage and suggests the possibility of malaria as the cause of death. The lungs were collapsed and dried up but showed diffused blackening, a common occurrence in the lungs of ancient Egyptians, probably due to inhaled smoke from cooking fires.

Numerous specimens were taken from the autopsied organs. These will be rehydrated and examined by the latest scientific methods, including biochemical, haematological, light and electronmicroscopic techniques, for evidence of disease.

While the examination of Nakht's mummified body will enrich our palaeopathological knowledge, the funerary wrappings provide new information about Egyptian textile technology and costuming in the twelfth century B.C. In addition to the torn strips of material used as bandages and the larger pieces composing an outer shroud and pads, there are at least two articles of clothing. All the fabrics are linen. Although they vary in quality and fineness, all have the same tabby construction (one thread over, one thread under). The state of preservation also varies. Though greatly yellowed with age, undoubtedly the textiles were originally bleached white.

Most of the bandages are simply strips torn from larger pieces of plain white linen. That these were not specially prepared funerary wrappings is shown by the fact that the pieces from which they were torn were already well worn. Presumably these were sheets or curtains made of loom widths of material.

Aesthetically the bandages used for the ornamental diagonal wrappings on the outside of the



Left: The large bag tunic (shaded areas indicate missing sections). The sketch of what the garment may have looked like with a sash in place is based on the actual measurements and on reconstructions from pictorial representations.

Above: The smaller tunic with finely plied fringes and the remains of a hemmed slash neck hole and stitch marks along the selvages.

mummy and immediately under the first shroud are the most interesting. The firmly woven, warp-faced linen is considerably above the average in quality and is patterned with blue stripes. One bandage preserves both the starting transverse selvage, marked with several blue threads, and the finished end with elaborately plaited fringes. The entire length can be reconstructed, although a small section which was wrapped over the damaged head is missing. When the piece is conserved, we will be better able to determine its original dimensions.

The outer shroud was formed of two large pieces of plain linen, one wrapped around the legs and feet, the other covering the upper body with a deep tuck over the hips. A narrow strip of linen was tied under the tuck in belt fashion, giving the suggestion of a garment. Other pieces of linen, folded or wadded, were used to pad the mummy to maintain a symmetrical profile.

Next to the body were the remains of a large sack-like tunic consisting of a single length of plain linen, nearly as fine as a dinner napkin, with a circular neck hole. The neck opening has a finely rolled hem. The selvages had originally been joined at the sides, with small openings left for the hands, and the garment, measuring roughly 45″ (104 cm) in width and 50″ (127 cm) from shoulder to hem, would have covered the wearer to the ankles. As found with the mummy, the side seams were torn and the garment was arranged with the neck hole at the centre back; the front was brought over the head to cover the chest, while the back was taken down to be wrapped around the feet.

A voluminous tunic held in place with a sash is characteristic of New Kingdom festive costume. Sculptural and pictorial sources reveal several ways of wearing this costume. Most commonly the excessive fulness of the tunic was arranged in front in a series of deep pleats and held in place with the tightly wrapped sash extending from midrib to below the hips.

Within the folds of the tunic was another garment laid across the abdomen and legs. At first we thought this was the sash for the tunic; however once washing and blocking had begun under the careful hand of Mark Burnham, textile conservator, it was soon apparent that we were dealing with another tunic. This tunic is considerably smaller and may have been a child's garment. It is extremely finely woven and beautifully finished with decorative bands across either end formed of heavier weft threads and a row of finely plied fringes. The simple slash neck hole was hemmed and the sides had once been joined. The seams had been ripped open and the piece torn in half lengthwise.

The garments show signs of considerable wear. The random mixture of clothing (a third fragment with sewing formed one of the body pads) indicate that these garments, like the material used for the bandages, came from a supply on hand at the mortuary and are probably not clothes used by the deceased.

The fragility of the textiles in their present state, coupled with the fact that these are the oldest seamed garments in the ROM's collections, led to the decision to begin conservation work at once. There is a good possibility that we shall have a costume fit for display.

So Nakht, the humble temple weaver who lived and worked in Thebes nearly 3,200 years ago, has become a figure of considerable importance both to Egyptology and to medicine. Histological and pathological studies should increase our knowledge of economic and living conditions in ancient Egypt by giving us information about Nakht's nutritional level and general health. We may also hope to learn more about the medical practices of the time. In such ways the detailed study of one particular item adds to our general knowledge of a whole culture. When all the results of the autopsy of Nakht have been assembled and studied, a number of questions will have been answered, and a further set can then be asked.

Dr. Peter Lewin is a staff physician at the Hospital for Sick Children in Toronto and a founding member of the Palaeopathology Association. A.J. Mills has done extensive field excavation in Egypt and the Sudan and is now Assistant Curator of ROM's Egyptian Department. Dr. Howard Savage is a Research Associate in ROM's Ornithology Department and is also on the staff of the Department of Anthropology at the University of Toronto. John Vollmer joined the Museum in 1968 and is now Assistant Curator in the Textile Department.

The Growing Collections

An anecdote from the annals of art history records how Giovanni Domenico Tiepolo, reacting to a challenge to his originality from one of his patrons, designed the series of etchings of the Flight into Egypt, *Idee pittoresche sopra la Fugga in Egitto*. In this series Domenico etched twenty-two different versions of the same subject without repeating himself. The ability to compose variations on a central theme was held in high regard in the eighteenth century, and in his twenty-two etchings Domenico gave proof of his fecundity in what was called *invenzione*.

It was not only in his etchings that Giovanni Domenico Tiepolo proved his inventiveness. For his own edification and amusement he executed several series of drawings, some running to more than 100 variations on a set theme. Both sacred and profane subjects appeared in his drawings, some of them derived from works of his father, the renowned Giovanni Battista Tiepolo.

Among the sacred themes, two are represented by drawings recently acquired by the Royal Ontario Museum. They are variations on the subjects, *God the Father supported by Angels in the Clouds*, and *Christ received into Heaven by the Father and the Holy Spirit*. Both ROM drawings come from a group of fourteen exhibited in London in 1966. The two drawings are of approximately the same size and may have come from the same sketchbook. Both are in the typical pen and sepia wash so frequently used by Domenico for his drawings and both are signed with the characteristic signature "Domo Tiepolo f". They may be compared with other drawings of Domenico Tiepolo in public collections.

The depiction of God the Father as an old man in loose flowing robes, a treatment very different from the late mediaeval depictions featuring jewelled cope and mitre, is of the form known as the Ancient of Days, common from the period of the Renaissance onward and best known in the works of Michelangelo. Scriptural origins for the treatment of the subject seen in the two drawings may be found in the Old Testament in the Book of Daniel (7: 9, 13, 22) and in the New Testament in the Gospel According to St. John (1: 18). The triangular halo, seen in both drawings, was a normal symbol of the Trinity.

The drawing of *God the Father seated and holding a Sceptre* (ROM 974.111.1) may be compared with

versions in the Museo Correr, Venice, in the Royal Printroom, Copenhagen, in the Albertina, Vienna, and in the Art Institute of Chicago, among others. J. Byam Shaw, in *The Drawings of Domenico Tiepolo*, London 1962, claims a knowledge of nearly sixty versions of the composition of *God the Father in the Clouds supported by Angels and Cherubs*, but mentions that the numbering on the left-hand top corners runs as high as 102. Most of the drawings are signed, are of roughly the same size, and appear to be derived from Giovanni Battista Tiepolo's Este altarpiece of 1759.

The second drawing, *God the Father seated on Clouds at the Foot of the Cross surrounded by Putti and Angels, supporting the dead Christ* (ROM 974.111.2), is a variation of the theme of Christ received into Heaven, also described as *The Trinity in Clouds*. Shaw describes the variations on this theme in connection with the ceiling fresco of the Church of the Pietà in Venice (1755) on which Domenico worked with his father, and Domenico's own fresco for the Church of S. Lio in Venice (1783).

The depiction of the Trinity with the dead Christ is frequently encountered in the art of the eighteenth century. It is derived in part from the mediaeval *Throne of Mercy* or *Gnaden-stuhl,* in which God the Father is seen holding in his arms the cross with the crucified Son, while the Holy Ghost is represented by a dove. The recumbent form of Christ, however, suggests also the influence of the Pietà, the late mediaeval composition of the Virgin mourning over the body of the crucified Christ, which has been taken down from the cross.

The two Domenico Tiepolo drawings are among the most noteworthy recent acquisitions of the European Department and are to be exhibited publicly in a special exhibition of Baroque and related art scheduled for late 1974. The exhibition will include, among examples of Florentine Baroque bronzes and paintings, supporting material from the earlier Renaissance and later Rococo periods, including art from other regions of Italy, such as Venice, Bologna, and Rome. K.C.K.

As a first major move in the new fiscal year, the European Department has secured for its collection of Renaissance and Baroque bronzes a fine figure of *Venus chastising Cupid* (65 cm high, in *cire perdue* technique, with a fine dark brownish patina). This important acquisition has been made possible through the generosity of Mr. Robert Laidlaw.

The figure comes, via the London art market, from the Marczibanyi collection of Hungary. When first published in 1955 by G. Entz (*I Bronzetti della Collezioni Marczibanyi*) it was attributed to Adrien de Vries, but recent evidence has revised this attribution. The figure was purchased by the ROM as a work by the Dutch architect and sculptor Hendrik de Keyser (1565-1621) but the German sculptor Caspar Gras (1590-1694) has more recently been suggested as an alternative. Any present ascription, no matter how tempting, can only be tentative until confirmed by additional evidence. What cannot be contested, however, is the fine quality of the bronze with its strong sense of Mannerism approaching the Baroque. While the statuette is reminiscent of the work of Giovanni da Bologna, the artist has succeeded in creating a new model of a subject much in demand by art collectors of all periods. In the existing repertoire of the European Department's collection of bronzes the Venus will form an important link between north and south European art, between Renaissance and Baroque, monumental despite its small size.

Canadians are very upset when antiques cross the border heading south, but occasionally the exchange goes the other way. The Textile Department has recently been enriched by a gift from Mrs. Oswald Noel Edwards of two exquisite quilts from New Jersey, made by Catharine Gulick about 1830. These are not recent arrivals in Canada but came north with an ancestress of the donor almost 100 years ago. One is quite overwhelming, with a central octagon made of 3,480 small diamonds of plain and printed cottons placed to form subtly shaded concentric rings. The precision of cutting and sewing are very humbling for a modern craftsman. The second quilt, while not as breathtaking, is almost more appealing and very beautiful in design and workmanship. It has a repeating design of radiating suns in bright red against a white ground with cool green floral print. Both quilts will be featured in the Harvest '74 exhibition of recent accessions in the Textile Galleries (November 22, 1974-March 30, 1975).

The West Asian Department has recently acquired a cylinder seal, one of the most characteristic forms of artistic expression in ancient Mesopotamia. First used during the Uruk period (3200-3000 B.C.), it continued in vogue until the Achaemenid period (538-331 B.C.), and at times was used in areas as widely separated as the Aegean and Egypt on the west and the far reaches of the Iranian plateau on the east.

The example pictured here was a gift to the Museum from an anonymous donor in British Columbia. It comes from Babylonia, and dates from the Old Babylonian period (*c.* 2000-1600 B.C.). It is a very fine example of seals from this period. Pictured are two figures, the one facing right being presumably a high official or king, the one facing left a god wearing the horned cap of divinity. The inscription reads, "The god Amurru the son of the god An." Amurru is a god identified with the western Semites who infiltrated Mesopotamia from about 2100 B.C. onwards, and who eventually became the predominant part of the population. The most powerful of the Amorite kings was Hammurabi of Babylon, whose famous stele is stylistically similar to our seal. Amurru was the shepherd god, and the shepherd crook is perhaps symbolic of this aspect of his being.

Another recent acquisition of the West Asian Department is a large box or *sunduq* (ROM 974.68.1) composed of carved wooden panels, each decorated with Arabic inscriptions. The vertical corner posts are roughly-hewn quartered logs, decorated only on the visible sides. The box probably sat over the tomb of a holy personage in a shrine. The inscription names the Twelve Imams, indicating that the person was Shiite, perhaps a descendant of the Imams. It does not name the person or give the date of his death, but the angular Kufic epigraphy, interspersed with flowering tendrils, suggests the twelfth century A.D. The box probably came from Egypt or Iran. It is unique in our collection. Further study of the corner posts may help ascertain the precise country of origin and date of the box.

A Meeting House for Friends

D.L. Newlands

Photographs by Bill Robertson

Not far from the centre of the town of Newmarket, Ontario, is a small frame Quaker meeting house, a rare example of early Canadian Quaker architecture. The building is situated on a two-acre meadow, now kept cut by a mechanical mower, south of the first interchange leading to Newmarket from Yonge Street as one approaches the town from the south. Its board-and-batten construction is the only visible sign to most of the passing commuters that the structure is very old by Ontario standards. The building survives today in virtually the same condition as when it was built in 1810-12, and a meeting of Quakers has used the site continuously since 1806. Each week the Quakers assemble in the building to "wait upon the Lord", as their seventeenth-century English forefathers had declared they should do in towns and along the highways.

The architecture of the building is plain and unadorned. The simplicity of line reflects the belief of the Quakers, or Friends as they are more correctly called, that the assembled people, not the building, are the "church". The structure itself was therefore of minor importance.

The interior of the meeting house is divided into two equal parts, one for women and the other for men. In the nineteenth century the men and women would retire to their own part of the building to conduct

Preceding pages: The architecture of the Yonge Street meeting house reflects the Quaker belief in simplicity.

Below: The interior of the meeting house has not been altered since it was built in 1810. In this view the raised facing benches can be seen on the right. One of the shutters separating the men's and women's areas is closed.

business and discuss requests by members to be married "under the care of" the Friends. During First Day (Sunday) worship the women and men would meet together. Today, the practice of separating the sexes is no longer followed, but a series of vertical shutters or screens inside the meeting house is a reminder of the former practice.

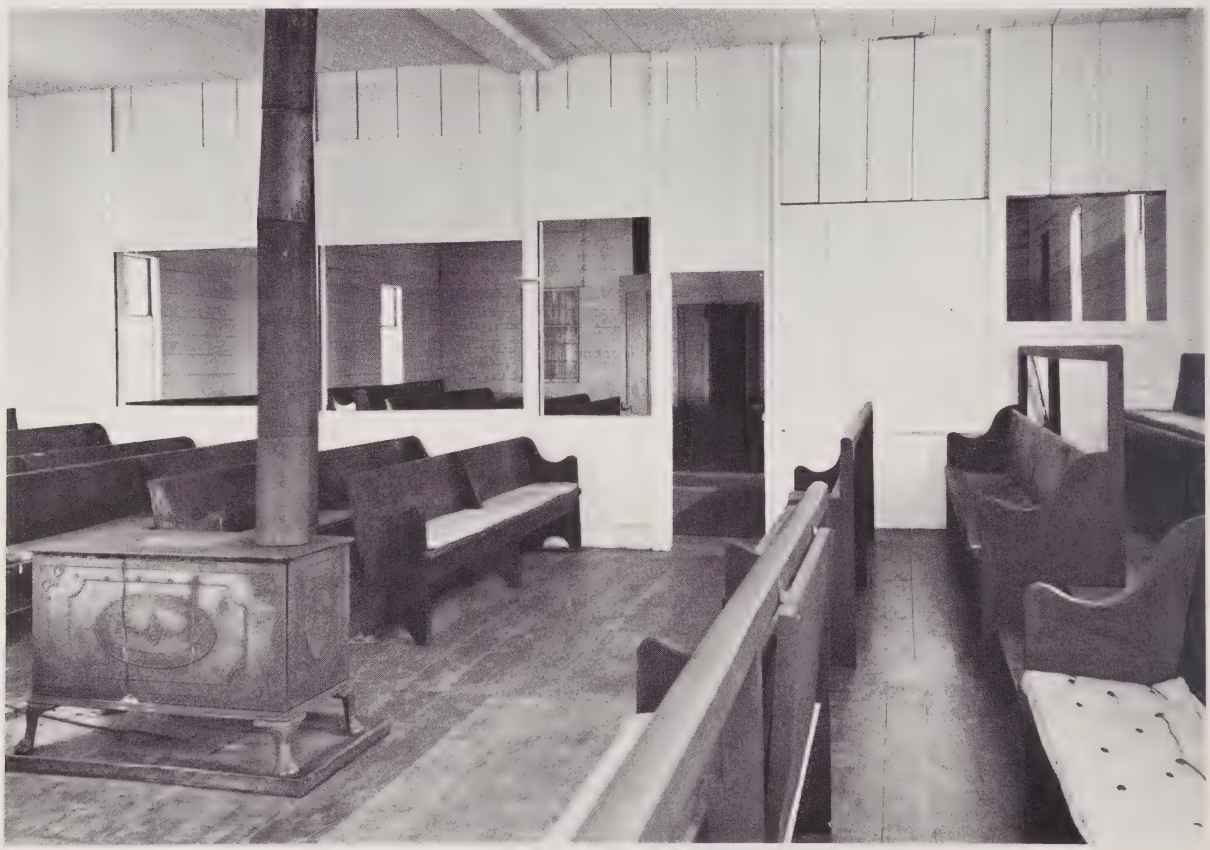
Another distinctive feature of early Quaker meeting houses is the raised facing benches—three rows of tiered benches facing the assembled congregation. On these benches the elders, overseers, and visiting itinerant "ministers" would sit each First Day during the Meeting for Worship. Only three early frame-construction Quaker meeting houses remain in Ontario. The other two are at Sparta and Coldstream. All three buildings have the shutters and raised facing benches.

Other interesting features of the Yonge Street meeting house are the cast-iron stove used to heat the building, the benches made for the Friends, and the early iron hardware on the windows and doors. The rising-butt hinges on the doors are probably the earliest known examples of their type in Upper Canada.

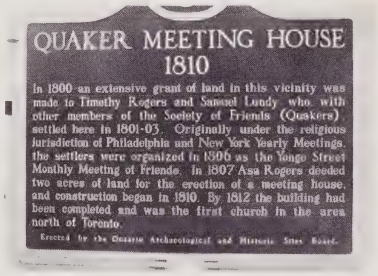
Visitors entering the building on a quiet autumn afternoon can experience in the coolness of the air what John Greenleaf Whittier, the Quaker poet, described when he wrote:

In calm and cool and silence, once again
I find my old accustomed place among
My brethren, where, perchance, no human tongue
Shall utter words . . .
First Day Thoughts, 1852

The architecture of the building



The eastern end of the meeting house as seen from Yonge Street


QUAKER MEETING HOUSE
1810
In 1800 an extensive grant of land in this vicinity was made to Timothy Rogers and Samuel Lundy who, with other members of the Society of Friends (Quakers), settled here in 1801-03. Originally under the religious jurisdiction of Philadelphia and New York Yearly Meetings, the settlers were organized in 1806 as the Yonge Street Monthly Meeting of Friends. In 1807 Asa Rogers deeded two acres of land for the erection of a meeting house, and construction began in 1810. By 1812 the building had been completed and was the first church in the area north of Toronto.
Erected by the Ontario Archaeological and Historic Sites Board.

is only part of the uniqueness of the Yonge Street meeting house. There are also the extensive documentary records of the Quakers who worshipped there. Minutes of the meeting date from 1804 to the present. This is a rich source of primary materials for the study of the social geography of the region. Earlier this year the *Journal* of Timothy Rogers, the Quaker leader who received the original land-grant for the area, came into the possession of the Quaker community.

In his *Journal* Timothy Rogers gives the first indication that a meeting place had been established before the present building. He noted, "We began to meet soon in a house of mine . . . and after a while built a log room." By 1808 it was evident that a larger building would be necessary. A minute dated the 13th of 10th Month indicates that the need had become sufficiently important to have the unanimity required for a minute. A committee of eighteen Friends was asked to "unite in the size and plan of a house . . . and produce an estimate of the expense thereof and report to the next meeting".

At the next monthly meeting for business the committee reported "that they are all united in building a frame one story high [meeting house], about 35 feet by 70 feet, which they think may be completed for about 1750 dollars . . . ". A new committee was appointed to draw up a subscription paper and "try what sum can be raised". The committee was apparently successful, for it was able to report at the following meeting that 1,600 dollars had been subscribed. The Friends then recorded their approval, reporting that they were "united in work going forward".

The present meeting house might have been begun as early as 1808 had it not been for a devastating plague that ravaged the early settlements on Yonge Street. In 1809 Timothy Rogers wrote in his journal that while returning from a visit in the United States he found "a great death on Yonge Street". He himself lost five married daughters and two sons.

On the 18th of 1st Month 1810 the Friends' meeting agreed that in "our present situation" the size of the proposed meeting house should be reduced to 30 by 60 feet and that an additional piece of land, situated immediately north of the cemetery, purchased as the location for the structure.

We know that the present meeting house was completed by 1812. Although the Quaker records are not clear on the completion date—Quakers did not solemnize buildings or lavish any special attention on these worldly matters—the *Journal* of Timothy Rogers reports that in 1812 "Friends have a good house . . . now built." In the same entry, he describes the first separation of Friends in the meeting community, led by David Willson, who later became the leader of the Children of Peace and built the Sharon Temple at Sharon, Ontario.

Quaker immigration to Upper Canada had been encouraged by Lieutenant Governor John Graves Simcoe. In 1792 he wrote to Dr. Phineas Bond in Philadelphia, "The information which Capt. Stevenson has given me, that many of the people of the Society

The western view of the meeting house shows an addition built in 1822 to provide extra facilities.

of Friends ... have thoughts of settling in Upper Canada, appears to me of much importance to the future prosperity of the Province." The Quaker settlers under the leadership of Timothy Rogers took up the requisite forty farms and established a community closely bound by ties of kinship. The David Willson separation began the process of division that helped to weaken the Quaker settlement during the nineteenth century. The next separation was in 1828, and there was another in 1881.

The Yonge Street meeting house was retained by the Wilburite party in 1881. This conservative group of Friends followed the cause first championed in 1845 by John Wilbur of Rhode Island, who had asserted that the task of the Society of Friends was to reaffirm the ancient testimonies which had given the Quakers their distinctive witness. The Wilburites saw no need to change the Yonge Street meeting house. Their influence has been the single most important factor in preserving the building in its present condition.

The progressive Friends' faction

followed a different path in 1881 and readily adopted non-Quaker forms in worship. Their places of worship reflected the more traditional Protestant church architecture. Many of the simple early meeting houses retained by the progressive Friends in 1881 were dismantled and replaced by red-brick churches during the early years of the twentieth century.

Another influence diminishing the Quaker community at Yonge Street was the increasing number of disownments of rebellious younger members who did not choose to follow the rigid customs of their parents. The meeting's records indicate that hardly a family had been spared the sorrow of disownment of at least one of its members by the Friends' community. The social effects of this practice weakened bonds of kinship and resulted in the rapid decline in the Quaker population in the area. Today, about twenty-four members remain in the local Friends meeting, of whom only a few are descendants of the original settlers.

The impact of change in the Newmarket area during the first century-and-a-half of the life of the Quaker meeting house has been exceeded by that of the more rapid changes of the past ten years. Similar effects have been felt by other communities that have become dormitory towns for rapidly expanding Metropolitan Toronto. These changes include new housing developments, regional government buildings, and road expansion. The meeting house is presently on the fringe of a new town, most of whose inhabitants have no historical roots in the Newmarket area. These changes will undoubtedly be felt by the Quaker community.

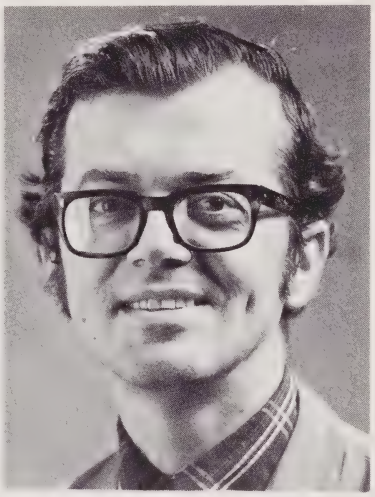
A building without central heating, water supply, toilets, or hydro cannot continue to meet the physical needs of the younger Friends and attenders who will want to use it. Faced with the need to decide whether to add facilities to the historic building or to transfer it to one of the heritage groups that might maintain it as a relic of early Ontario, the Friends were united in choosing to adapt and restore the structure. They asked B. Napier Simpson, Jr., noted restoration architect, to design a modern basement to contain the central heating unit, toilets, hydro, and all-purpose rooms. The building is to be skidded from the site, and a poured-concrete basement will be constructed there. The meeting house will then be replaced on the basement in such a way that the improvements will not affect its appearance from Yonge Street. The only changes to be made in the interior will be those necessary for heating and indirect lighting, but these have been designed to be compatible with the present building.

The ambitious project is an illustration of how early buildings can be adapted to modern needs without altering the original quality of the structure. The Yonge Street Friends Meeting House is unusual in the fact that its use today is the same as when it was first built—a distinction that few buildings of similar date can still claim.

The Canadiana Department of the ROM has encouraged the project and has shown an interest in the public accessibility of the meeting house. The support of the department has included the sharing of staff time to advise in the work of restoration.

Public interest in the restoration project has increased as a result of widespread publicity in the Newmarket community, in Toronto, and through the national media. The project will be of some benefit to the public, for the Quaker community has indicated its willingness to have the building open to the public during part of the year. The bus-loads of school children who formerly had to peer through the wavy-glass windows will then be able to enter and learn about the early settlers of the area. The building will also be available for suitable uses to the new surrounding community.

David Newlands joined the staff of the Canadiana Department of ROM in 1973 as field archaeologist and has been directing excavations of early Canadian industrial sites. His interest in the Yonge Street Friends Meeting is due to his involvement in a number of Quaker organizations, including the Canadian Friends Historical Association. He is currently convener of the committee overseeing the restoration project. He is also treasurer of the Toronto Bruce Trail Club and a member of the Newmarket Historical Committee, a group of citizens appointed by the Town of Newmarket, Ontario, to develop historical resources in the town.



Our Past in Pictures

Tracking Down Canada's Unknown Artists

Mary Allodi

The exhibition of Canadian watercolours which opened in October in the Sigmund Samuel Canadiana Gallery represents a small but select sampling of the total collection of 2,200 watercolours and drawings listed in the recently published comprehensive catalogue of this important group of the ROM's holdings.

The identification of pictures is often a far less logical procedure than literature on the subject might lead us to believe. The process involves a combination of attention to detail, detective work, and ghost-chasing. Dr. Sigmund Samuel was fascinated by Canadian history and began collecting views of early Canada before 1914. There was a wealth of material available at this early date, but little was known about the artists, most of whom had visited Canada between 1760 and 1860. Moreover, most of the watercolours were acquired at sales where the names of their previous owners were withheld. When a picture presents itself as an isolated item, unlabelled and unrecognized, the researcher is left with an open field. When incorrect information has been handed down with a picture, the process of identification can become even more complicated.

In the relatively short period of 150 years covered by the collection, the names and styles of the artists were not considered to be as important as the content of the pictures themselves. However, knowing who painted a picture may sometimes be the first step to knowing what the content represents. Quite often the biography of an artist can connect a view in one of his pictures with some historic event that he is known to have witnessed. Architects sketched views of buildings they designed, and engineers of bridges they built. Aides-de-camp recorded the journeys of the officials they served. Many of the artists of this period were officers in the Royal Engineers or the Royal Artillery,

and their precise rendering of buildings and terrain (learned at military academies) is often in sharp contrast to their awkward figure drawing.

When a large group of sketches which had been signed "W.H. Bartlett" (a forgery; see *Rotunda*, Summer 1968) were identified as the work of J.R. Coke Smyth, they gained in significance because they added to our knowledge of Lord Durham's travels through the Canadas during the rebellion year of 1838. Smyth was travelling with the Durham retinue as drawing master to the Earl's daughters.

In the same way, when a group of fine blue-wash views of a canoe journey from Niagara to Lake Huron and along the French, Mattawa, and Ottawa Rivers was finally identified as the work of Lieutenant-Colonel Charles Ramus Forrest, it could be read as a pictorial record of official travels made by the Earl of Dalhousie, whom Forrest served as aide-de-camp from 1821 until 1823. These views had previously been attributed to Thomas Davies, who painted in Canada at a much earlier date. It was a watermark on the paper of one of the views, dated after Davies' death, that started the search for another attribution. The fact that at least one other artist painted the same views complicated the search for a while (the second artist was also a Dalhousie protégé), but when the Coverdale Collection came out of storage we found signed and dated Forrest views which confirmed the new attribution.

In 1953 the Canadiana Department acquired a series of watercolours which were said to be the work of Charles Murray, Earl of Cathcart, who was Commander-in-Chief of the British forces in

Canada from 1846 to 1849. However, when it was noticed that one view bore a date after his death, the works were labelled "anonymous". The unknown artist had the habit—unique, in my experience—of inscribing his views with two dates, one indicating the day on which the spot sketch was made, the other giving the date on which the picture was completed at home, usually about two years later. When I came across a similar method of inscription in a sketchbook by Lieutenant George Seton owned by the Public Archives of Canada, I knew that we had our man. Style and dating confirmed the hunch. On looking into Seton's background, we found that he had served under the Earl of Cathcart and was in the same regiment as his son, the Honourable Augustus Murray, during the period when the sketches were made. One can only assume that Seton gave Murray a group of his watercolours and that with the passage of time the author's name was forgotten and replaced by that of the owner.

The Canadiana Department's collection includes not only views acquired singly, but also artists' albums and sketchbooks. Such groupings of views tell their own story through a sequence of pictures which reconstruct the day-to-day activity of the painter. For example, the Frances Ann Hopkins sketchbook records the 1859-60 season at Lachine where Mrs. Hopkins lived with her husband, Edward Hopkins, secretary to Sir George Simpson, Governor of the Hudson's Bay Company. The sketches show her watching ice-jams and timber rafts on the St. Lawrence; going to the train to meet her husband; or taking the children to school. They

Preceding page, lower:
The Hon. James Hope (1807-54)
Camping Near Quebec
Watercolour. 7, 9/16 x 13, 7/16 inches. Inscribed l.l. of mount Night of 22d Feby 1840; *l.c. of mount* Hon. James Hope, Lady Mary Hope, Hon. Louis Hope & Lt. Col. & Mrs. Codrington. Camping Nr. Quebec.

Preceding page, upper right:
Lieutenant-Colonel Charles Ramus Forrest (active 1778-1828)
The Earl of Dalhousie travelling on the French River
Blue wash over pencil. 12, 9/16 x 20, 11/16 inches. Inscribed l.l. No. 3 & 57 On French River
The same view (colln. National Gallery of Canada, formerly in the Coverdale Colln.) was painted in watercolour by Forrest in 1822.

Lieutenant George Seton (1819-1905)
The Platform, Quebec
Watercolour over pencil. 9, 1/2 x 13, 11/16 inches. Inscribed verso The "Platform", Quebec Canada / 28 April 48. / 14 Sept. 48

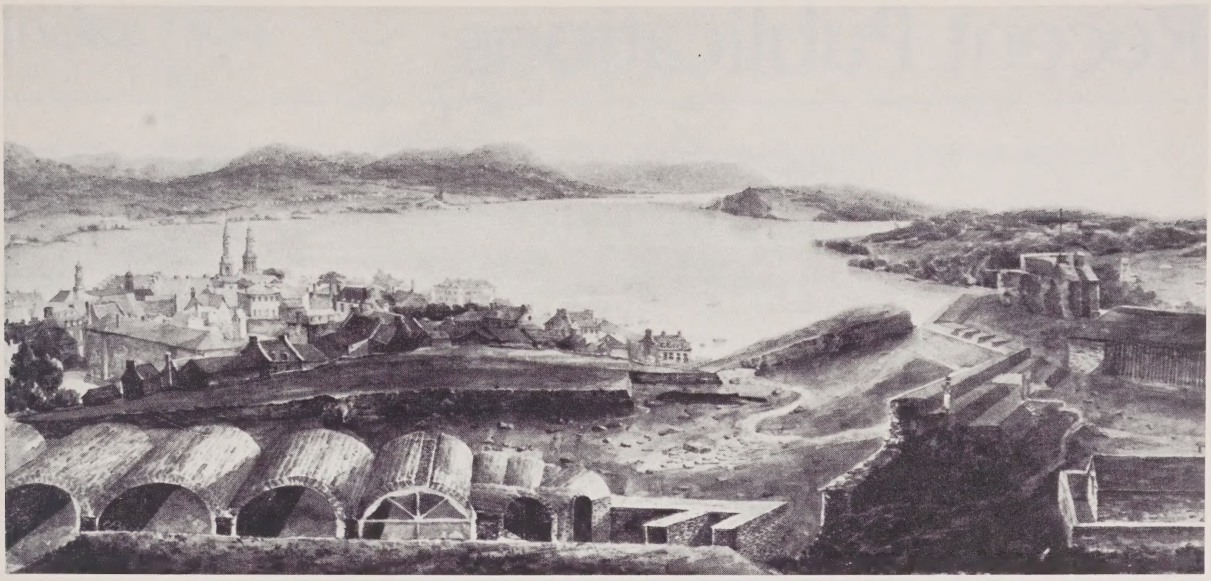
Upper, left and right:
William Roebuck (c. 1795/7-1847)
Panorama of Quebec from the Citadel Walls
Watercolour over pencil. 13 x 38, 7/8 inches
Watermark: Whatman 1816
View on two sheets joined at centre and laid down, but with a central portion missing. In the foreground are the partly constructed magazines and walls for the new citadel, which were built 1820-31.

Lower:
Frances Anne Hopkins (1838-1918)
The Lachine Pier seen from the Hopkins' Garden
Pen and black ink over pencil. 7 x 10, 3/16 inches. Inscribed l.c. Our Garden Lachine, *u.r.* Caughnawaga.

also record a cricket game in Montreal and a canoe reception for the Prince of Wales.

Social pastimes were simple and wholesome in these early years. The group shown around a campfire on a winter evening in 1840 were taking full advantage of the adventures the new country had to offer. They had camped along the Saguenay and hunted the moose. They had fished the many streams around Quebec. They had snow-shoed, tobogganed, and sleighed away the winter months. And they had travelled the waterways as far as the fabled Niagara Falls. The Honourable James Hope was filling an album with watercolour mementoes of these happy years for his young wife, Lady Mary Francis.

The artists mentioned, and others like them, were representative of a large group of British officers and administrators who, accompanied by their families, served a tour of duty in British North America and painted their own souvenirs as they would write private diaries, with no thought of recording the scene for a larger audience than their own immediate circle. Their landscape sketches (often unsigned but usually titled and dated) were brought home to remain inside the protective covers of family albums for 100 years before being "discovered" again by Canadians searching for the past. Sometimes the artists exchanged sketches, a practice which has obscured the authorship of many paintings. Lieutenant-Colonel Hope often went sketching with Lieutenant-General Barnard in Quebec, and many of their views show the same site on the same date. Millicent Mary Chaplin, the wife of one of their fellow officers, copied Hope's sketches as well as painting her own views. And Barnard was known on occasion to copy a view by Montreal painter James



Duncan. When Captain Henry Warre arrived in Montreal, he also adopted some of Duncan's themes—or was it the other way around?

The identification of cities in pictures is usually relatively easy (although there are exceptions), but pure landscape can be maddeningly difficult to recognize. It is fortunate that that prolific painter Edwin Whitefield made notes on his drawings, because he covered a wide range of territory and the scenes in his sketchbook pages frequently jump from Minnesota to Montreal without warning. When he did not know the precise name of a place, he noted the fact, as in his view of L'Islet, P.Q., which he inscribed *St. —? between Rivière du Loup and Quebec.* Whitefield travelled relentlessly, sketching from canoes, steamboats, wagons, trains, or any other conveyance which would reveal the vast panorama of the land to his encyclopaedic jottings. He must have been in the habit of mislaying his sketchbooks, because notes inside the covers include the instruction: "Finder to take this book to [address] and receive a reward."

Some pictures can be dated by the historic landmarks they contain. For instance, civil engineer Frederick Rowan's watercolour of Rice Lake was painted shortly after the building of the railway bridge in 1853, and before its right-hand portion was converted into a causeway in 1856. A wide-angle view of Quebec City by William Roebuck can be dated by the arches in the foreground, which are the powder magazines now under the Citadel walls; they are shown during their reconstruction and the enlargement of the walls which took place between 1820 and 1831. However, there are some recognized pitfalls in this method of dating pictures. Prints of Montreal's Church of Notre Dame, showing spires, were issued in 1829, a full twenty-one years before the spires were added to the square towers. And conversely, Terrapin Tower, which stood at Niagara Falls from 1833 to 1873, was not always included in views painted during that period.

By naming sites, determining dates, and chronicling the lives of artists and the events of their times we give an historic setting to the watercolours of early Canada. But the beauty of the land and the varied pageant of the people who settled it are conveyed only by the pictures themselves.

Mary Allodi is on the staff of the Canadiana Department and has just completed a catalogue of Canadian watercolours and drawings. She is a graduate of McGill University and of the Institute of Fine Arts, New York University. Prior to joining the ROM *staff, she worked at the Metropolitan Museum of Art, N.Y., and the National Gallery of Canada, Ottawa.*

Recent Publications

Canada's history told through the impressions of artists comes alive in a unique way in Mary Allodi's complete catalogue of Canadian watercolours and drawings in the ROM. There are views of the country from 1757 to 1930: exploration and military campaigns, immigration and settlement, urbanization and industry—the people and the land as seen by 270 artists, ranging from military topographers to gifted amateurs and represented in the catalogue by 2,200 entries.

The introduction traces the history of the collection; it also includes physical descriptions of the watercolours and provides both concise biographies of the artists and extensive subject and geographic indices. As well as depicting early Canada from ocean to ocean, the two volumes of the catalogue present some 380 views of the United States. **Canadian Watercolours and Drawings in The Royal Ontario Museum;** *Mary Allodi*; ROM, 1974; 2 vols., 290 and 260 pp., ill. B&W and colour, cased $30.00 the set.

Filling a long-felt need for a major reference work on Canadian freshwater fishes—giving identification, distribution, biology, and economic importance—is **Freshwater Fishes of Canada,** by *W.B. Scott and E.J. Crossman*. In this book the authors, both members of the ROM Department of Ichthyology and Herpetology and of the University of Toronto Department of Zoology, offer detailed facts and figures on species found in Canadian lakes, rivers, and streams. They accompany their discussions with especially prepared range maps and accurate and realistic drawings of typical examples of the species described. Keys, especially devised for the identification of native species, and tested over many years, as well as numerous References and Suggested Readings, offer the reader a full guide to the recognition of and extant literature on our country's abundant freshwater fishes. **Freshwater Fishes of Canada;** *W.B. Scott and E.J. Crossman*; Bulletin 184, Fisheries Research Board of Canada, Ottawa, 1973; xi and 966 pp.; $9.75.

A Selected Bibliography on Mercury in the Environment, with Subject Listing; **ROM Life Sciences Miscellaneous Publication;** *Susan Robinson and W.B. Scott*; 56 pp.; $1.25

Thermal Relations of the Neotropical Frog *Hyla labialis* (Anura: Hylidae); **ROM Life Sciences Occasional Paper 26;** *Dario Valdivieso and J.R. Tamsitt*; 12 pp.; $.60

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